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ABSTRACT

As part of Project IMPACT's efforts to identify and develop procedures for complying with the impact requirements of Public Law 94-482, a case study was made of Illinois Projects in Horticulture. Fourteen horticulture projects in high schools and junior colleges were discovered through a previous study, personal interviews with two University of Illinois professors, and information from the State Vocational Education office. Information on the projects was obtained from project directors, a state consultant, and participating teachers. A sample of 18 schools and a junior college were visited to assess the impact of these projects on the horticulture instructors and on the horticulture programs. Although fewer than half of the teachers sampled had attended the workshops described in the 14 projects, it was found that the materials produced in the projects were circulated widely beyond workshop attendees. It was also found that the Vocational Agriculture Service's "AIDS" publication was disseminated to nearly all the teachers in the state, and that there was a need for periodic ornamental horticulture workshops since there was frequent teacher turnover in this field. Project IMPACT discovered that in quantitative terms, the greatest documented impact of the horticulture funding in the state has been the increase in the number of programs claiming reimbursements for vocational horticulture--from just one program in 1967 to 133 in 1977--at a cost of less than $200,000. But the impact these programs have had on the knowledge, skills, attitudes, or employability of horticulture students remains an unanswered question. (KC)

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# DEVELOPMENT OF PROCEDURES FOR ASSESSING THE IMPACT OF VOCATIONAL EDUCATION RESEARCH AND DEVELOPMENT ON VOCATIONAL EDUCATION (PROJECT IMPACT)

## Volume 4 -- A Case Study of Illinois Projects in Horticulture

STATE BOARD OF EDUCATION
Donald F. Muirheid, Chairman

ILLINOIS OFFICE OF EDUCATION
Joseph M. Cronin, State Superintendent of Education

CE 029 821

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Department of Adult, Vocational and Technical Education

Springfield, Illinois
August, 1980

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## Abstract

In order to identify and develop procedures for complying with the impact requirements of Public Law 94-482, PROJECT IMPACT studied five problems: (1) how to define impact, (2) how to assess impact, (3) how to show cause and effect relationships between research and development (R&D) activities and changes in the vocational education teaching-learning situation, (4) how to predict the probability of impact, and (5) how to facilitate the impact of R&D activities. The methods used in these studies were to review and discuss views of experts and literature related to the problems and to analyze the process of impact in selected cases of R&D activities and exemplary programs in vocational education in Illinois. Findings of PROJECT IMPACT's activities from August 1, 1978 to July 1, 1980 are reported in nine volumes: (1) Context and Principles of Assessing Impact, (2) A Case Study of the Illinois Occupational Curriculum Project, (3) A Case Study of the Illinois Network of Exemplary Occupational Programs for Handicapped and Disadvantaged Students, (4) A Case Study of Illinois Projects in Horticulture, (5) A Case Study of Illinois Career Education Projects at the Awareness Level, (6) A Case Study of the Occupational Survival Skills Project, (7) Case Studies of Two Illinois School Districts with Innovative Vocational Education Programs, (8) A Field Study of Predicting Impact of Research and Development Projects in Vocational and Technical Education, and (9) an Executive Summary.

Volume 4 is a case study which examines the impact of 14 projects in horticulture. The projects were traced from the bottom-up (i.e., from site visits to State office consultants). It was found that the materials produced were widely circulated beyond workshop attendees. The study also found a large increase in the number of programs claiming reimbursements for vocational horticulture.

Authors' Acknowledgements

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Colin Hook
James Ethridge

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## Overview of PROJECT IMPACT

In 1974, the U.S. Office of Education (USOE) asked the National Academy of Sciences (NAS) to assess the impact of approximately 250 million dollars spent by USOE on vocational education research and development (R & D) activities during the ten years between 1965 and 1974. The NAS committee on Vocational Education Research and Development (COVERD, 1976) reported that the R & D of the decade studies did have impact on curriculum development but did not have documented widespread impact on the knowledge, skills or employability of large numbers of students. National evaluations of vocational R & D in addition to the COVERD report have been similarly critical (Development Associates, 1975; Rand Corporation, 1975; Comptroller General of the United States, 1974). Acting upon these reports, Congress passed the Educational Amendments of 1976 (Public Law 94-482) which mandated that contracts for R & D in vocational education not be allowable unless the applicant could "demonstrate a reasonable probability that the contract would result in improved teaching techniques or curriculum materials that would be used in a substantial number of classrooms or other learning situations within five years after termination of such contracts" (Federal Register, 1977).

PROJECT IMPACT is a state funded study designed to develop procedures for assessing the impact of vocational education research and development efforts on vocational education. The primary purpose of the study is to identify and develop procedures for complying with the impact requirement of Public Law 94-482.

The study addresses itself to three problem areas: (1) how to define impact, (2) how to assess impact, and (3) how to show a cause-and-effect

relationship between project activities and changes in the vocational education teaching-learning situations. The study also addressed two subsidiary problems: (1) how to predict the probability of impact and (2) how to manage on-going contracts to increase impact probability.

The methods used to conduct this study were to review literature related to the problem areas, to interview individuals who have experience and expertise in the problem areas, and to analyze the process of impact of several programs of related projects which were funded by the Illinois Office of Education/Division of Adult, Vocational and Technical Education/ Research and Development Section and one project funded by the Comprehensive Employment and Training Act (CETA).

The major activity of this study was analyzing the programs (cases) of related R & D projects. For the first year, it was decided to select two cases for "top-down" analysis and two cases for "bottom-up" analysis (see Volume 1, Appendix A, p. 43). The project staff referred to these types of retrospective analysis as "tracking." It was anticipated that the two types of tracking would produce different insights about impact. For example, bottom-up tracking might better identify "bottlenecks" to impact than would top-down tracking while "top-down" tracking might be more effective in relating project intents and project outcomes. One staff member was assigned as "tracking manager" for each of the four cases and was instructed to keep a detailed log of her/his activities (e.g., identifying documents, retrieving documents, identifying key people and interviewing them, recording data, analyzing data).

Nominations for the first four case studies were sought from members of PROJECT IMPACT's Advisory Committee, project consultants, and project staff members. The following cases were selected for "top-down" tracking:

1. "A Research and Development Project in Occupational Education" (The Illinois Occupational Curriculum Project -- I.O.C.P.) which was developed by Joliet Junior College and funded by them and by the Illinois Department of Adult, Vocational and Technical Education in fiscal years 1970-72.
2. "The Illinois Network of Exemplary Occupational Programs for Handicapped and Disadvantaged Students." At the time the case study was initiated, the network was in its fourth year of operation. It was in the "dissemination" stage and IOE/DAVTE had funded Illinois State University to coordinate dissemination for the Network's eight demonstration projects.

The third and fourth cases, which were selected for "bottom-up" tracking, were:

3. "Illinois Projects in Horticulture." IOE/DAVTE funded some twelve R & D projects in horticulture between 1967 and 1978. Both private and public schools participated in these R & D efforts.
4. "Illinois Career Education Projects at the Awareness Level." IOE/DAVTE funded three or more major projects in this area between 1970 and 1978, and CETA began funding one for the Illinois Department of Corrections in 1975.

During its second year PROJECT IMPACT studied the "Occupational Survival Skills Project" and "Two Illinois School Districts with Innovative Vocational Education Programs" and developed a model for an "Impact Assessment System for the Illinois Board of Education/Department of Adult, Vocational and Technical Education/Research and Development Section."

PROJECT IMPACT's activities for the 1979 and 1980 fiscal years are reported in nine volumes. Volume 1 -- Context and Principles of Assessing Impact -- contains an introduction to PROJECT IMPACT, a review of literature and views of experts in regard to planned educational change and impact, the methods used to conduct impact case studies, a concise listing of references used during Phase 1 activities, and appended materials such as the initial project proposal and data collection instruments which were developed for use in case studies. Supplemental reports of the project are contained in the following volumes:

Volume 2 -- A Case Study of the "Illinois Occupational Curriculum Project"

Volume 3 -- A Case Study of the "Illinois Network of Exemplary Occupational Programs for Handicapped Disadvantaged Students"

Volume 4 -- A Case Study of Illinois Projects in Horticulture"

Volume 5 -- A Case Study of "Illinois Career Education Projects at the Awareness Level"

Volume 6 -- A Case Study of the "Occupational Survival Skills Project"

Volume 7 -- Case Studies of "Two Illinois School Districts With Innovative Vocational Education Programs"

Volume 8 -- A Field Study of "Predicting Impact of Research and Development Projects in Vocational and Technical Education"

Volume 9 -- Executive Summary of Volumes 1-8 and Conclusions and Recommendations for Assessing the Impact of Vocational Education Research and Development on Vocational Education

A Case Study of Illinois Projects in Horticulture

The case study contains a narrative report, a summary of critical decisions, a chronology of major events and a list of published products of horticulture projects.

1. Narrative Report

The narrative report contains an introduction to the case, general descriptions of horticulture projects along with the details of tracking them from the bottom-up and a conclusions section.

1.1 Introduction

With the passage of the Vocational Education Act in 1963 and the amendments of 1968, schools and agriculture teachers were given more opportunity and greater responsibility for developing programs in ornamental horticulture. This case study has examined the impact of 14 projects (or parts of projects) funded by the Illinois Office of Education, Department of Adult, Vocational and Technical Education, on instruction and program development in ornamental horticulture and also in agricultural topics which were relevant to horticulture. Five of the projects were identified initially through examination of Ramp's, Research and Development Projects in Illinois: An Impact Study (1976). A visit to the Curriculum Library and the DAVTE at Springfield uncovered only two more horticulture projects. The most useful sources of information leading to the present list of horticulture-related projects were professors in the College of Agriculture and the College of Education at the University of Illinois. Through their knowledge of horticulture projects seven projects were added to the final list upon which the interviews and analyses were based.

The projects which were identified are listed below. Details are incomplete on some projects because PROJECT IMPACT was unable to obtain complete information.

1. Vocational Horticulture Speciality Programs for Secondary Students. May, 1967 - September, 1969.
   Total funding: $10,000 to $12,000 (estimated).
2. Commercial Horticultural Skill-Practices Institute for Illinois Secondary and Junior College Agricultural Occupations Instructors: A Private Industry Approach. February, 1970 - June, 1970.
   Total Funding: $2,269.
3. Complete Modest Horticultural Demonstration Package for Illinois High School (Rochelle Township High School). August, 1971 - June, 1972.
   Total Funding: $7,790.
4. Improvement of Horticultural Alternatives Package for Schools with Existing Facilities (Naperville Community High School). November, 1971 - June, 1972.
   Total Funding: $5,255.
5. Horticultural Instructional Packages: Demonstration Center Alternatives for Occupational Education in Illinois (Chicago). 1971-1972.
6. Horticultural Instructional Packages: Demonstration Center Alteratives for Occupational Education in Illinois (Alton). 1971-1972.
7. Improving Environmental Quality Through Applied Biological and Agricultural Occupations Programs in Illinois Schools. January, 1971 - December, 1971.
   Total funding: $14,400.
8. Improving Competencies of Teachers of Ornamental Horticulture in Specific Areas of Instruction. April, 1971 - September, 1971.
   Total funding: $11,896.

9. Development of Teachers' Guide and Students' Instructional Materials for Seven Selected Applied Biological and Agricultural Occupation Related Areas. (Program Planning Guide in Ornamental Horticulture, Volume 5, June 1975).

10. Workshops to Improve Competencies of Teachers of Vocational Ornamental Horticulture Programs. July, 1975 - June, 1976.
    Total funding: $16,681.

11. Ornamental Horticulture Workshop. August, 1977 - December, 1977.
    Total funding: $1,588.

12. Pesticide Workshops and Teaching Materials for Secondary and Community College Teachers of Agriculture. January, 1977 - August, 1978.
    Funding 1977-78: $16,796.
    Funding FY 1978: $10,893.

13. Competency Based Curriculum for Agricultural Occupations Programs. Phase 1 -- Developing an Occupational Matrix and Completing a Lab Title Purposive Study. 1978.
    Funding -- Phase 1 FY 1978: $14,742.
    -- Phase 2 FY 1979: $42,795.

14. Competency Based Curriculum Project in Ornamental Horticulture for Secondary Schools.
    Final Report, Procedures and Curriculum Guide for a Competency Based Curriculum Project in Ornamental Horticulture for Secondary Schools, Phase 1. July, 1978.
    Funding -- Phase 1 FY 1978: $5,874.
    -- Phase 2 FY 1979: $10,065.

This list of projects may not be complete because other projects were mentioned during interviews with project directors and an agriculture consultant at the State office in Springfield. However, PROJECT IMPACT was unable to discover further information about the source of funding of these projects.

The method of investigation of the impact of these projects was a "bottom-up" tracking method. During the 1978-79 school year, site visits were made to high schools, area vocational centers, and a junior college in Illinois to assess the immediate impact of these projects. It was expected that among the teachers interviewed would be participants in workshops and courses who would be able to comment on the success of the projects. At another level project directors were interviewed to provide information about the origin and development of the projects. At the State office level, one of the agricultural consultants was interviewed to assess what contact the state office had with the projects in their development and implementation.

The basic sequence of steps for tracking was designed to collect data within the following framework:

1. The direct or indirect measures of actual impacts on various groups.
2. The dissemination of the product and information about it.
3. The field testing of the product (or the idea) and the analysis of that field testing.
4. The history of the development of the idea (e.g., the source of support, the identity of developers).
5. The design and conceptualization of the idea (e.g., the intended target group and the intended outcomes).

6. The origin of the product (did the project come from a mandated need or a felt need?).

A computer print-out of schools teaching at least one horticulture class in 1977 was supplied by the Illinois Office of Education. From this listing a sample of schools and area vocational centers was drawn. It was known, however, that this list of 133 schools was incomplete, and that there would be institutions teaching horticulture which would not be included in the population. The state was divided into the six regional educational areas with three institutions chosen from each area. The number of pupils taking horticulture in each school in the list was known, so in each of the six areas, one institution was chosen with less than 25 students in horticulture, another with between 26 and 50 students in horticulture, and the other with over 50 students in horticulture. In addition, from the four community colleges in the state teaching horticulture, one college was randomly chosen to be visited. Choices of secondary schools were random within each of the three size categories and six geographic areas.

Once the sample of schools, vocational centers and a community college had been drawn, teachers and instructors were contacted to determine their willingness to participate in the study. Everyone in the sample agreed to be interviewed and arrangements were made to visit the teachers and instructors at their institutions to determine their contact with funded projects in horticulture and associated areas of interest.

Information about the instructors, background, their institution's courses and facilities, and their contact with horticultural projects was obtained through personal interviews lasting about one hour to an hour and a half. The list of projects was shown to instructors. Only a few of

the instructors were able to recognize the titles, even if they had attended a particular workshop or course. This problem had been foreseen, and the investigator had prepared brief descriptions of the projects and where possible had obtained materials which had been used in the projects or had been developed and distributed as a result of the projects' funding. As a result of this preparation instructors were able to identify and discuss some of the projects. If instructors stated that they recognized materials or stated that the school had a copy of a particular guide, the investigator tried to obtain corroborating evidence such as being shown the guide from the instructor's files. The investigator stated initially in all interviews that responses were completely confidential, and at no time did the investigator feel that instructors were unwilling to express themselves freely about the school or state education policies regarding horticulture, the quality of the funded projects, and the availability and adequacy of resources.

The sample consisted of instructors from 15 high schools, three area vocational centers and one junior college. The twenty-two instructors taught approximately 900 students composed from grades 10-12 in high schools and area vocational centers and from post-secondary classes in the community college. The number of horticulture classes in the high schools and vocational centers ranged from one class to six classes per school year. The community college offered 26 horticulture classes. The smallest number of students studying horticulture in an institution was 13, the largest number 96. The courses taught were as follows:

| Course | Number of Classes: High Schools and A.V.C.'s | Number of Classes: Community College |
|---|---|---|
| Arboriculture | 1 | 10 |
| Commercial floriculture | 4 | 4 |
| Conservation and park management | 0 | |
| Fruit and vegetable production | 1 | |
| General ornamental horticulture | 12 | |
| Greenhouse management | 3 | |
| Indoor plants | 2 | |
| Landscaping and landscape design | 9 | 6 |
| Plant propagation and turf management | 2 | 6 |
| Plant science | 4 | |
| Total | 38 | 26 |

Institutions' horticultural facilities varied considerably. The junior college had extensive greenhouse facilities plus 17 acres of land for practical horticulture. All three of the vocational centers had greenhouses, while only three of the high schools had their own greenhouse. One high school rented a greenhouse from a local nursery. In most high schools and in two of the vocational centers horticulture was taught by instructors who were trained as production agriculture specialists. Facilities in most institutions were well developed for teaching agriculture but poorly developed or nonexistent for horticulture.

Of the 22 instructors only nine taught horticulture as their sole subject area. This latter figure includes all three of the junior college instructors and six of the instructors in high schools and vocational centers. The teaching experience of the instructors interviewed ranged from one in his first year of teaching to one about to retire after 38 years of teaching. The mean for years of teaching experience was 10 with a median of 7 years. Sixteen of the instructors had farming backgrounds; one teacher had a horticulture background; and five teachers had no farming or horticulture background. Several of the teachers had their own farms

or did some form of farming in their spare time. Two of the specialist horticulture instructors each owned their own nursery business, while the third had a small landscaping firm.

In their horticulture courses teachers used instructional materials from a variety of sources. Textbooks varied depending on the nature of the course and the teacher's personal preference. One important finding common to virtually all of the instructors and teachers in high schools and vocational centers was that great reliance was placed upon materials supplied by the Vocational Agricultural Service of the University of Illinois. Institutions were subscribers to the Vocational Agriculture Service's mailing service which meant receiving all new instructional materials on agriculture and horticulture and the Vocational Agriculture Service monthly bulletin, "AIDS." "AIDS" gives details of new publications in agriculture and horticulture and where these publications can be obtained, and information about workshops and courses for instructors and teachers. It also provides up-to-date information on all aspects of agriculture and horticulture relevant to the needs of educational institutions. Teachers highly valued the teaching units, film strips and slides produced by the Vocational Agricultural Service, and in many instances the bulk of the instructional materials used by teachers came from this source. Only in the community college did the horticultural instructors indicate that they rarely used Vo-Ag Service materials. They preferred materials produced by the Pennsylvania State and Ohio State Universities, in addition to the teaching materials the instructors had prepared themselves.

Before describing the various projects and the impact that they have had on horticulture teachers and on the horticulture curriculum in schools, it is important to mention some factors relevant to the impact of the pro-

jects. It was not until the last five years that Illinois has trained teachers of horticulture specifically. Before 1973, teachers were trained in agriculture, particularly production agriculture, but not in horticulture. As a result, most teachers of horticulture in Illinois were trained as agriculture teachers or were practitioners of horticulture who have little teacher training. Consequently, the R & D projects which are designed purely for horticulture teachers (who have little professional training and tertiary education in horticulture) provide basic materials to aid the initiation of horticulture courses or to improve existing ones.

The main type of vocational education in agriculture offered in Illinois schools prior to 1963 was production agriculture. With the passage of the National Vocational Education Act the opportunity was provided to develop vocational education programs in ornamental horticulture. In addition, ornamental horticulture was seen as a broad area of study which needed to be broken down into occupational areas or job clusters. It will be seen in several of the funded projects that the concept of occupational areas or job clusters has been maintained, providing appropriate foundations for the planning of curricula, workshops and courses.

The project directors on most of the projects were interviewed and the information obtained from them is incorporated into the account of each project. In addition a consultant at the DAVTE, Mr. Allan Utech, was interviewed to gauge what contact the State office had with projects in their development and implementation. Where relevant his comments are incorporated into the project reports.

1.2 Project Descriptions

1. Vocational Horticulture Specialty Programs for Secondary Students.

This project was sponsored by the Illinois Research Coordinating Unit, Board of Vocational Education and Rehabilitation, State of Illinois and the Agricultural Research Division, Vocational and Technical Education Department, College of Education, University of Illinois. The project director was Professor Paul Hemp, University of Illinois. In September, 1967, pilot programs in landscape and grounds maintenance were started at Naperville High School and Joliet West High School. At the same time a research project was started at the University of Illinois to help the pilot schools plan and conduct the new vocational programs and to evaluate the results of these programs. The development of pilot programs in landscape and grounds maintenance illustrated the focus on an occupationally-oriented program for secondary students over a two-year period.

The project was designed to promote and evaluate instructional programs in landscape and grounds maintenance in area vocational centers and high schools. More specific objectives, taken from the final report, were:

a) To identify, plan and field test appropriate course content for programs in landscape and grounds maintenance.

b) To test the practicality and effectiveness of landscape and grounds maintenance programs in area vocational centers and high schools.

c) To devise ways and means of providing at-school work experience for students enrolled in horticulture classes.

d) To develop and field test a schedule of on-the-job experiences which students could follow at their training stations.

Naperville and Joliet West High Schools submitted proposals for pilot programs in August, 1967. After numerous consultative meetings between the project director, his staff, state consultants and school representatives during 1967 and 1968, the programs began in August, 1968 with a beginning course in the first year, and a more advanced course in the second year. At Naperville, four juniors and ten seniors enrolled for the initial program. At Joliet West five students enrolled initially, changing to four in the second semester in 1968. In the following year 13 students enrolled in the landscape and grounds maintenance program at Naperville and 18 students at Joliet West.

The two programs were somewhat similar in that they both focused on the following topics: turf management; trees, shrubs and flowers; soils and soil additives; plant propagation; greenhouse construction; and landscape planning. In the final report there is ample evidence that considerable attention was paid to providing "hands-on" practical opportunities and experience. Students made several field trips to visit golf courses, garden centers and other horticultural facilities. A notable feature of Naperville's implementation of the horticultural program was the building of a school greenhouse by students, the first in a high school in Illinois and through the financial help of the Illinois FFA Foundation. In 1968-69 the horticulture class was able to make extensive use of the greenhouse involving a wide variety of practical activities and gained valuable greenhouse management experience. In the second year of the program at Naperville a variety of placement-employment experiences were provided outside the school. At Joliet West there were no greenhouse facilities and so placement-employment experiences were offered for both the first and second year students.

Both schools had established advisory councils to advise and assist the horticulture teachers who were trained in production agriculture. The councils helped the teachers plan the instructional programs and provided teaching materials, supplies and other resources. The council met several times during the duration of the project and individual members of the councils advised the teachers on specific problems.

Both schools reported in 1969 as intending to continue the programs as a regular part of the curriculum. In addition, through the work of the teacher at Joliet West High School, a vocational program in horticulture was established at Joliet Junior College. An important evaluation of the success of the programs was that the programs provided practical experiences in horticulture and applied biological science to students who had little or nc farm or nursery experience.

As a result of the interviews with high school and area vocational center instructors, one teacher was interviewed who actually took part in the project. He judged the project to have been extremely successful and stated that Naperville High School has had many visitors to study the programs there and inspect the greenhouse. He stated that an average of 12 visitors per year both from Illinois and out-of-state are shown the school's facilities. The teacher at Naperville also visits other schools and gives presentations to groups of teachers. Four of the teachers interviewed had visited Naperville High School and its greenhouse and all admired (and envied) the programs and the facilities.

Professor Hemp, the project director, was interviewed, but he had little to add to the information already presented. He stated that these were the first horticultural programs in the state at the high school level and these programs were seminal in their influence. This is illustrated by

one school where the agriculture/horticulture instructor stated that he had visited Naperville High School before building their own school greenhouse. Professor Hemp felt that the project also was a learning experience for the teachers in that it extended their horticultural knowledge considerably. Mr. William Hills, the Naperville High School teacher in the project who is still at Naperville, is now the chairman of the Metropolitan Horticulture Teachers Association as well as a founder member.

Mr. Allan Utech, the state consultant on the project, was interviewed about the project. He stated that there was a special need for the establishment of an agricultural-type program in the urban area of Chicago. He stated that the Naperville program became a nucleus for many developments in horticulture since 1969. He reported that Mr. Hills has since then served on a number of advisory and steering committees. In addition, he stated that the building of the greenhouse initiated a course in horticulture for DuPage Junior College taught by Mr. Hills. Mr. Utech reported that this project was the foundation for many of the horticultural programs which now exist in the Chicago urban and suburban areas.

2. Commercial Horticultural Skill-Practices Institute for Illinois Secondary and Junior College Agricultural Occupations Instructors: A Private Industry Approach.

This project was funded by the Illinois Research and Development Unit. The principal investigator was Theodore Buila, Southern Illinois University, Carbondale. The project was concerned with strengthening the practical horticultural skill orientation of existing agricultural occupations personnel -- particularly instructors employed in metropolitan Illinois school districts. The project intended to provide Illinois with a nucleus of

market-place oriented instructors to initiate, maintain and develop relevant horticultural occupations instruction.

Two teachers were interviewed who attended the course. Both found the course excellent. They stated that participation involved a number of demonstrations, field trips and practical greenhouse and nursery experience. There were a considerable number of "hands-on" activities. It was described by both teachers as essentially a "skilltraining" form of course or workshop. A third teacher stated that he knew of the course but could not attend because he was engaged in an extensive adult education program in agriculture.

The private industry approach referred to in the title is the use of the staff and facilities at the DuPage Horticultural School, Inc., an educational institution established by Ball's, a nursery firm. The reasons for the use of this school were given as: 1) The DuPage facility offered a comprehensive market-place teaching setting with an adequate number of competent employees to supervise skills training; and 2) West Chicago, where DuPage Horticultural School was sited, was centrally situated among the prime instructor audience.

The implementation procedures were reported as having been two summer sessions, two weeks each in 1970 and 1971 coupled with two short Christmas and Easter holiday sessions. Priority was given to participants employed in the metropolitan school districts of Greater Chicago and Greater East St. Louis. Instruction and skill training were carried out by DuPage Horticultural School while Southern Illinois University was responsible for program coordination.

Fifteen Illinois elementary and secondary school teachers completed private industry oriented workouts and instruction in June, 1971. The

teachers and schools involved in the demonstration centers described under projects 3 and 4 had successfully completed the initial re-training phase offered in the Commercial Horticulture Skill-Practice Institute.

Little else was discovered about this project and inquiries at S.I.U. and at Springfield did not yield any further information.

3. Complete Modest Horticultural Demonstration Package for Illinois High School (Rochelle Township High School).

This project was funded by the Research and Development Unit, Division of Vocational and Technical Education. The project director was Mr. Glenn W. Curl, Rochelle Township High School. This project was concerned with the development of a pilot program and instructional package. DuPage Horticultural School, Inc. was subcontracted by the Rochelle School Board to:

a) Help determine and develop the local Horticultural Instructional Packages.

b) Coordinate the securing and distribution of components of the Instructional Packages as needed.

c) Provide outside advice for the horticulture instructor.

d) Coordinate the evaluation of the cost vs. the instructional effectiveness of the pilot program.

A feature of this project was the building of a school greenhouse. The facilities at Rochelle today have been described as excellent by a University of Illinois agriculture professor. Two of the teachers interviewed stated that they had visited Rochelle High School and were familiar with its program and its facilities. One of the teachers described the horticulture program as good. To the researchers' knowledge no demonstration package was developed.

4. Improvement of Horticultural Alternatives Package for Schools with Existing Facilities (Naperville High School).

This project was funded by the Board of Vocational Education and Rehabilitation. The project director was Robert D. Marshall, Director of Curriculum Services, Naperville Community High School District. This project utilized teachers and schools who participated in the Commercial Horticultural Skills-Practice Institute (project 2). Alternative approaches to implement and maintain occupational education in horticulture would be developed through a series of Horticultural Instructors Packages fitted to differing school situations, namely urban, transition and rural in the Greater Chicago and Greater East St. Louis regions. It was further proposed that the instructional packages, component parts and Demonstration Center "results" would be analyzed for cost effectiveness. Additionally, slide and workbook outlines would be completed for horticultural occupational instruction units in bedding plants, growing structures, pot crops, merchandising plant materials and community environmental projects.

It was suggested that seven school districts encompassing nine separate school environments should be utilized as Demonstration Centers to test and evaluate alternative costing and instructional approaches. The development, coordination and evaluation of Demonstration Center "horticultural instructional packages" would be directed by the DuPage Horticultural School (DHS). The completion of the slide and workbook outline in cooperation with participating school districts would be handled by DHS. The DHS, in effect, was retained as a program consultant by each school district.

The description of this project applies equally to projects 3, 5 and 6 which were in fact parts of the same large project. Rochelle, Naperville

and Alton were all recipients of funds under the same general project. At that time (1971) it was stated that there were no more than three Illinois schools which had facilities or anything approaching adequate plant materials to allow calling existing horticultural programs vocational education. It was felt that the proposed Junior High School and High School Horticultural Demonstration Centers would yield Illinois-based costing on approach alternatives plus fleshed-out instructional materials in the five horticultural teaching areas already mentioned.

In brief, the sequence of key events was supposed to have been as follows:

| Major Event Summary | Event Calendar |
|---|---|
| Complete local Horticultural Instructional Packages design. | Aug., 1971 |
| Initial Horticultural Instructional Packages component delivery. | Aug./Sept., 1971 |
| Assemble local Horticultural Instructional Packages for instruction. | Sept.-Nov., 1971 |
| Slide and workbook activity. | Sept.-Oct., 1971-72 |
| Review and evaluation activity. | Sept.-Oct., 1971-72 |
| Open house-East St. Louis/Chicago. | March/April, 1972 |
| Complete slide/workbook outlines. | Oct.-Dec., 1972 |
| Complete evaluation/final report. | Oct.-Dec., 1972 |

From talking to the teacher at Naperville High School, Mr. William Hills, it appeared that the major outcome of this project for Naperville High School was the building of a potting room next to the greenhouse the school had obtained previously. He reported never having seen the instructional packages and doubts whether the units were ever produced.

However, there is evidence that Demonstration Center open-houses were held at Naperville High School in 1972 and 1973 when four to six open-houses were held at which slide presentations illustrated the work that the school was doing in vocational horticulture. The school also hosted other interested parties on an individually selected basis. This investigator found no evidence of Horticultural Instructional Packages produced as a result of this project, and non teachers interviewed were aware of the details of this project except for one teacher who was involved at a participating school. However, it was reported that both Alton High School and DeKalb High School obtained greenhouses as a result of this project as well as Rochelle High School. Whether the other schools participating in this project obtained greenhouses is not known. To the researchers' knowledge no further products were developed.

Evaluation procedures were planned as an integral part of this project. Teachers, administrators, employers and students were to be interviewed to assess both the motivational value of the instructional package to students and what the instruction accomplished. However, as the Naperville High School horticulture teacher noted, there were no instructional packages produced for Naperville, at least, and thus no evaluation procedures were implemented.

The impact of Naperville High School horticulture program of this project and the project of 1976-79 appears to have been considerable, principally due to the building of their greenhouse and the additional facilities, plus the tremendous enthusiasm and hard work of the horticulture teacher who has been at the school for 32 years. In comparison with other schools visited, Naperville High School horticultural facilities are superb, and a number of students have obtained jobs in the horticulture industry.

5. Horticultural Instructional Packages: Demonstration Center Alternatives for Occupational Education in Illinois (Chicago).

The investigator was unable to discover which school received the funding. This project was part of the larger one concerned with the production of instructional packages for ornamental horticulture. No results could be found.

6. Horticultural Instructional Packages: Demonstration Center Alternatives for Occupational Education in Illinois (Alton).

Nothing was discovered about his project. The horticulture teacher at Naperville reported that he thought Alton High School received a greenhouse as a result of the project.

7. Improving Environmental Quality Through Applied Biological and Agricultural Occupations Programs in Illinois Schools.

This project was funded by the Board of Vocational Education and Rehabilitation. The project directors were Professors Roger L. Courson and Paul E. Hemp of the University of Illinois. The purpose of the project was to upgrade the technical competency of teachers and to provide them with instructional materials to enable them to carry on successful teaching programs.

The specific objectives were:

1. To clarify the scope and urgency of the environmental problem, especially as it involves agriculture.
2. To provide a body of specific subject matter instructional material relating to the problem.
3. To develop teaching plans and innovative teaching techniques which teachers can adopt to their local situations.

4. To demonstrate and teach methods of detecting and measuring environmental pollution.

Teacher's guides and subject matter packets were prepared in the following areas: 1) Laws regulating Agriculture and the Environment; 2) Animal Wastes; 3) Pesticides (Insecticides, Herbicides and Fungicides); 4) Fertilizers; 5) Conservation of Natural Resources. These materials were produced by members of the Vocational Agricultural Service, College of Agriculture and College of Education, University of Illinois. In addition, materials were obtained from various manufacturers of chemicals, pesticides and related products.

The major phases of the workshop were: 1) organize a steering committee; 2) select key teachers to teach other teachers; 3) plan specific course content; 4) develop subject matter materials; 5) conduct a three-day workshop for the key teachers; 6) hold 30 one-day workshops scattered over the state for the agricultural occupations instructors; 7) distribute the teaching aids; and 8) evaluate the workshop results.

Twelve key teachers were selected to attend a three-day intensive workshop in June 1971. Teachers were selected on the basis of their competency and interest in the subject, their leadership ability, their geographical distribution, and their willingness to participate in the project. Teachers were thoroughly educated both in the technical information and in the planning of the one-day workshops which each teacher was to organize later in the month. These 12 teachers then conducted a statewide series of 30 local one-day workshops for other fellow teachers in their FFA region or section. At first the teachers worked in pairs, and then each conducted one or two more workshops unassisted. At these regional workshops, participating teachers received four packets of materials and

teacher's guides that could be adapted to their local situations or environmental programs. Every teacher attending the workshops was asked to complete an evaluation form provided by the Division of Vocational and Technical Education. A number of teachers expressed favorable comments about the teaching aids, and the key teachers were reported as having done a splendid job in presenting and explaining how to use this material. Nearly 300 teachers participated in the environmental workshop.

The origin of the idea for the workshop came out of the popular concern for the environment and the preservation of the earth's resources. Courson and Hemp had visited schools in the Fall of 1970 and teachers had discussed with them the need for the education of students in environmental conservation. This concern was further discussed at the monthly Joint-Staff meetings of university staffs at the Universities of Illinois, Illinois State, Western Illinois and Southern Illinois, school and community college teachers and state consultants. Out of the meetings came the recommendation for the workshop to the state office, and Drs. Courson and Hemp were awarded the project.

As a result of the funded program over 300 pages of new subject matter leaflets, 20 out-of-state publications (596 pages), 8 College of Agriculture pamphlets (184 pages), 4 sets of 135 overhead transparencies, 3 slide films and tapes, 2 sets of slides and syllabi, and various demonstration kits were made available. Each teacher who attended the workshop received a complete set of materials. This amounted in total to over 300 sets initially, including various incidental requests for the materials. Since 1971 when these materials were produced, over 2,600 more sets of materials have been distributed within the state of Illinois and out-of-state.

Nineteen institutions were visited by the investigator. Sixteen teachers (16 schools) stated that they had the materials and used them in their teaching, including some parts for horticulture. None of the teachers interviewed had attended the workshops, although it was only seven years ago and the workshops were distributed broadly across the state. It was also discovered that in several schools the materials were also used by science teachers in courses on Environmental Science. The teachers expressed favorable comments about the materials and judged them to be of high quality. Some teachers felt that since these materials were produced several years ago, teaching materials and teacher's guides need to be revised.

8. Improving Competencies of Teachers of Ornamental Horticulture in Specific Areas of Instruction.

This project was funded by the Board of Vocational Education and Rehabilitation. The project directors were Professor Roger L. Courson and John B. Gartner, University of Illinois. The purpose of the project was to upgrade the technical competency of teachers and provide them with instructional materials to enable them to carry on successful teaching programs. Specific objectives were:

1. To identify the opportunities, nature of work, and potential reward in the field of ornamental horticulture.
2. To plan and organize areas of study and course content for local instructional programs.
3. To provide up-to-date information, based upon scientific principles and the skills needed to teach successfully in this area.

4. To develop basic demonstrations laboratory exercises and practical experiences suitable for developing important student abilities in ornamental horticulture.
5. To provide subject matter instructional aids and materials for teacher and student use.
6. To develop a level of confidence on the part of the participants to enable them to teach ornamental horticulture at a practical, doing level.

The origin of the idea for the project was similar to the source for project 7. That is it arose out of discussions with teachers and professional colleagues of the project directors and from the monthly Joint-Staff meetings. The initiation for the project came from Drs. Courson and Gartner. Springfield responded with funding.

Information about the workshop was sent to all secondary and junior college teachers of agricultural occupations in Illinois in March, 1971. Registration was limited to 30 participants. However, more than 50 applicants responded during the first two weeks. Teachers were selected by the date that their applications were received.

The content of the workshop was aimed at providing basic skills and related information in the following areas of ornamental horticulture: a) greenhouse management; b) plant propagation; c) turf management; d) arboriculture; e) landscaping. Various subject matter packets and instructional aids were prepared for the workshop participants which they could take back to their schools. The material and information would be useful in developing and conducting programs for students with an interest in ornamental horticulture. The workshop lasted five days with half the time being spent in the classroom and other half in the field or in the greenhouse.

Of the 22 teachers interviewed, two teachers stated that they had attended this workshop, although the list of partcipants includes only one of the teachers. The teacher who definitely attended described the workshop as excellent and stated that he valued the "hands-on" approach and the field trips. He stated that he used much of the information which he obtained at the workshop in his teaching. Other than these two teachers, no one else had seen the flier sent around about the workshop, had heard of the workshop or seen the materials. Mr. Allan Utech reported that nearly all the teachers who attended this workshop were agriculture teachers with virtually no knowledge of horticulture.

9. Program Planning Guide in Ornamental Horticulture (Volume 5).

This guide was one of a series produced in the Applied Biological and Agricultural Occupation related areas. This project was funded by the Board of Vocational Education and Rehabilitation. The contract was awarded to Southern Illinois University at Carbondale. The project director was Professor Thomas R. Stitt and the authors of this guide in horticulture were Mr. Roger R. Ross, Ornamental Horticulture Instructor, Lincoln-Way High School (now at Joliet Junior College) and Dr. Stitt.

This guide was written, as were the six others, to assist the Applied Biological and Agricultural Occupations teacher in enriching the existing programs at his or her institution and/or to provide materials as a basis for expanding or adding to the existing agricultural program. Each guide contains sections on the following topics: 1) Getting a horticultural program started; 2) Sample job titles and cluster areas; 3) Competencies for cluster areas and competencies for job titles; 4) Core course outline; 5) Exemplary teaching plans; 6) References -- books, magazines, bulletins,

etc.; 7) School facilities, equipment and supplies; 8) Audio-visual materials; and 9) Teachers' competencies and training available.

The project director reported that the origin of the idea for this project came partially out of the monthly Joint-Staff meetings where topics were identified as being ones in which teachers were interested, and partially as a result of the need in teacher education in agriculture for an urgent updating of curricula. Experienced agriculture/applied biological science teachers and instructors were not conversant with new developments in agriculture, horticulture and forestry. Thus this project represented an important inservice thrust. Mr. Allan Utech reported that in 1974 as a result of a meeting at Ohio State University, the U.S. Office of Education produced a list of agricultural competencies. It was decided by the State Office that assistance should be given to curricular areas in vocational education, and as a result of this decision and the discussions in the Joint-Staff meetings, a request for a proposal was drawn up.

The guides were circulated through four one-day workshops held in various parts of the state. Then workshops were advertised through the Vo-Ag "AIDS" bulletin and through the FFA organization. At these workshops teachers were taught how to use these guides. In addition, the guides were available to participants at the Vocational Agricultural Teachers June Conference, 1976, where a series of workshops was held. The guides were also publicized in Vo-Ag "AIDS" where a tear-off slip was available for requesting the guide. A further step to the guides' distribution was the distribution of the guides to all preservice teachers at teacher education institutions at the universities. In all, over 750 guides have been published and distributed, including 50 for out-of-state consumption. These guides are still available through the clearinghouse at Western Illinois University, Macomb.

Eleven of the teachers interviewed had copies of the guide. Three obtained the guide at sectional workshops, three at the Agricultural Teachers' Conference, three at their teacher education institution, and two were sent the guide through the mail. Seven of the teachers stated that they had looked at the guide, but had not used it at all. Four teachers felt that the guide was useful for the competencies listed, particularly in the light of recent developments in competency-based curricula. The general feeling of the teachers was that the guide was well-written, but they already knew most of what was in the guide.

From the feedback that Dr. Stitt had received, he made the following comments. It appeared that the bulk of the guides were not used. A smaller group of teachers have studied the guide selectively using portions that were relevant to their needs. A third and still smaller group adopted the planning guide completely and based their courses or program on the guide's suggestions.

10. Workshops to Improve Competencies of Teachers of Vocational Ornamental Horticulture Programs.

This project was funded by the Division of Vocational and Technical Education. The project director was Professor John B. Gartner, University of Illinois. Originally the contract called for two workshops each of five days, one to be held in northern Illinois and the other in southern Illinois. However, the contract was not approved until July 1st and there was not enough time to prepare adequately for the workshops before the end of the school year. As a result of a meeting of representatives from the Board of Vocational Education and Rehabilitation, private industry, Horticulture Department, and Vocational Agriculture and Agricultural Edu-

cation, the project was revised to hold three two-day sessions at each area selected.

The purpose of the workshop is self-evident from the project title. Because most of the teachers who are responsible for developing programs in horticulture have little formal training in Ornamental Horticulture, this workshop was conducted to increase the teachers' knowledge. The origin of the idea for the workshop came from discussions in the monthly Joint-Staff committee meetings. The project idea was suggested to the State department who then provided the funding.

The workshop in northern Illinois was held at Lisle and was very successful, having 42 participants. Edwardsville was chosen as the site in southern Illinois, but as there were only 6 participants, this workshop was relocated and combined with the third workshop held at East Peoria. There were 27 participants at this workshop including the original six participants at Edwardsville.

Because of the shortened length of the workshops, it was decided in consultation with representatives of the DAVTE and private horticultural industries that the emphasis of the workshop should be placed on resources and where information could be obtained. This was the theme for each of the subject matter areas: plant identification; grounds maintenance; landscaping and care of landscape plants; annuals and perennials; plant propagation; greenhouse management; nursery management; and turf management. A one-day field trip was held at various industry locations to show the vocational teachers the various phases of the industry. One day was devoted to implementing teaching aids and lesson plans. A fourth session was voluntary for teachers who had signed up for graduate credit under a University of Illinois class, Votec 477. In this session partici-

pants were asked to prepare lesson plans utilizing the materials given to them at the various workshops. Participants were asked to use these plans at their respective high schools and report back later on their findings and comments. In each of the sessions on subject matter areas there were representatives from industry to discuss industry's needs for the high school student and how industry could help teachers in vocational educational programs in ornamental horticulture.

An evaluation of the workshops was carried out by the project directors and instructors of the workshop. They all felt that the workshops were very successful and worthwhile. It was discussed by the instructors and the participants that they would like to have a workshop of at least a week's duration where the participants could actually get involved with the growing of plants and with more practical work. It was felt that if a workshop could be held at the University of Illinois, there would be more facilities and a more practical workshop could be given.

It was difficult for some of the participants to get off on Friday since many of their principals and superintendents would not allow them time off during the school period. Another difficulty in planning the workshops was due to fiscal year budgeting. By the time the workshop was approved it was impossible to set it up prior to the school year, and by the same token, it was too late to hold the workshop after the school year had ended in the Spring prior to the end of their fiscal year. If more advanced notice could have been given, then the workshop could have been set up and held prior to the school year, or if more time could have been allotted for budgeting and reporting, the workshop could have been held late in June after all the schools were out. Unfortunately, all the schools did not have holidays at the same time or began and ended instruction at

the same time, so it was difficult to coordinate a workshop and satisfy all the participants.

In the field of horticulture, it is impossible to set up practical demonstrations with plants and have them ready in a short period of time. It takes from four to six months to set up demonstrations prior to a workshop.

Participants in the workshop were given a reference booklet as a source for materials on the topics dealt with in the course and on other topics in horticulture. Three of the teachers interviewed attended the workshop and reported that they enjoyed participating. All had the booklet and reported using it. All three teachers stated that they would have preferred a less lecture approach and a more "hands-on" practical orientation. In addition, two other teachers had the booklet, having obtained it after seeing it mentioned in Vo-Ag "AIDS." Both these teachers found the booklet an excellent reference source. Three thousand copies of this booklet have now been distributed both in and out-of-state.

This workshop was very similar to that held earlier, in 1971, but the teachers, unlike those in 1971, were not almost totally agriculture specialists. Mr. Allan Utech reported that only about 50% of the participants at the workshop were agriculture teachers. The increased number of teachers at this workshop who were not production agriculture specialists reflected a growing interest in ornamental horticulture as a teaching subject open to teachers from other disciplines, such as botany, biology or environmental science.

11. Ornamental Horticultural Workshop.

This project was funded by the Department of Adult, Vocational and Technical Education. The project director was Mr. James B. Maguire,

Director, Wilco Area Career Center and the workshop director was Mr. David Manning, Instructor, Ornamental Horticulture, Wilco Area Career Center. The workshop was held at the Wilco Area Career Center on four Tuesday afternoons, October 4th and 18th and November 1st and 15th, 1977. The objectives for the workshop were:

1) Improve articulation between schools and the Horticulture industry.
2) Broaden scope of Horticulture programs and update programs to meet the needs of industry.
3) Promote use of school campus as part of Horticulture training facilities.
4) Bring educators in direct contact with industry personnel to observe and discuss required skills.

The four afternoons each focused on a different topic. The four horticulture areas were: Golf Course industry; Nursery industry; Landscape industry; and Greenhouse industry. Each afternoon session followed a somewhat similar program. At first discussion took place between representatives of the industry being focused upon that afternoon. This was followed by a field trip to an industrial location for demonstrations, inspections and discussions. In addition representatives from firms supplying materials, equipment and research knowledge were there to answer questions. Participants in the workshop would have the chance to ask questions of people from the Horticulture Industry as well as visit their operations first hand. They also had the opportunity to view first hand developments of the Wilco Horticulture Training and Skill Development Area on the school campus. Workshop participants would also be able to hear and question former Horticultural students now working in Horticultural careers.

Mr. Allan Utech, Consultant, Applied Biological and Agricultural Occupations, DAVTE, supplied Mr. Manning with a list of teachers, instructors and guidance counselors from the Chicago area and the surrounding regions to whom details of the intended workshop could be sent. When the workshop was proposed a goal of thirty people per workshop was set. Results show that an average of 32 people attended each session with the Greenhouse Industry and Nursery Industry session being the most popular. Participants mainly came from the Greater Chicago area, although there were teachers from Springfield and Normal.

Of the 22 teachers interviewed only two teachers had heard of the workshop, both having been sent details of it. However, both teachers had decided not to attend. One teacher stated that he had an FFA meeting on the same day as the session he wished to attend. The other teacher felt that his knowledge would not be increased by the workshop. This teacher also added that he did know a teacher who attended the session on turf management and found it excellent.

The origin of the idea for the workshop came from Mr. Manning and staff at the Wilco A.C.C. partly in response to a concern to provide teachers with more information about the Horticulture Industry and the opportunity to talk to people involved in various fields and partly to publicize the facilities of the Wilco Horticulture Training and Skill Development area on the school campus in the first year of its operation.

12. Pesticide Workshops and Teaching Materials for Secondary and Community College Teachers of Agriculture.

This project was funded by the Department of Agricultural, Vocational and Technical Education in conjunction with the Illinois Vocational Association. The project directors were Professors Roger Courson and Paul Hemp

of the University of Illinois. The purpose of the project was to provide teachers with up-to-date information on the federal and State Pesticide Laws and Certification and to provide instructional materials on the "Basic Principles of Safe Use, Handling, and Application of Pesticides."

A very similar procedure to the one used in project 7 (Environmental Quality) was followed where a core cadre of teachers were trained to present workshops elsewhere in the state at regional centers. Phase 1 of this project was to develop specific teaching materials such as teaching plans, subject matter packets, overhead transparencies, film strips, slide sets and other teaching aids on pesticides. This was carried out on schedule.

Phase 2 of the project was the selection of 25 key teachers throughout the state from high schools and community colleges who had exceptional interest, knowledge, and skills in the subject. The selection was left to each of the 25 sections to nominate two people as their representatives. These teachers were then advised of their nomination and facts about the two-day workshop dates and place. The key teachers decided with the other teachers in their section on the location and dates for their local inservice course. These dates were published in the Vo-Ag "AIDS."

The workshop's basic objectives were:

1) To help teachers implement the Illinois state plan for training pesticide applicators.
2) To help teachers understand recent federal and state regulations on licensing and application of "restricted-use" pesticides.
3) To provide teachers with training modules and sample lesson plans that will equip the student with the basic requirements for private applicators pesticide certification as identified by federal laws.

4) To provide teachers with information on where they can secure teaching aids and student study references and materials.

The project directors conducted a workshop on March 3, 1978 for the teachers in the Illinois Vocational Association Convention in Chicago. The 16 teachers in attendance received packets of training aids, pesticide manuals and certification tests at this workshop. At this workshop an evaluation form was distributed to provide feedback in improving future activities. A similar workshop was then held for the Chicago Metropolitan Agriculture-Horticulture Teachers on July 8, 1978, with 27 teachers attending. Because many of the Chicago teachers were unable to attend the July 8 session, an additional workshop was held at Triton College on October 19, 1978 even though it was after the project expired. The project directors conducted this workshop.

At a two-day workshop course on July 27-28 held at Urbana, 22 teachers were prepared for teaching the workshops in their regions. Each teacher was paid $112.50 for attending the training course, and worked with the project directors privately to prepare themselves. The next phase was to have the 25 teachers hold a total of 25 one-day inservice courses for the 450 high school and 143 community college agricultural teachers in the state. Two hundred and eighty-one teachers attended these regional workshops.

From the interviews of teachers around the state, it was very apparent that this workshop was widely known. Seven teachers of the 22 teachers interviewed attended workshops, i.e., one-third, which seems rather low for such a widely publicized project. However, the pesticide materials were available at 16 of the 19 institutions visited. All of the teachers interviewed who did not attend the regional workshop stated that

they had obtained the materials through the Vocational Agriculture Service. All teachers reported that they used the materials in their classes, though only five teachers stated that they used the materials for their horticulture classes. In addition, the materials are used in at least two schools by science teachers in their work on the environment and the use and effect of chemicals on the earth's surface. One science teacher interviewed found the materials very useful, having obtained them when attending the State Science Fair.

For those teachers who were not able to attend their sectional course, the project directors suggested that they contact their local teacher who was in charge, to arrange to receive their free packet of materials. The final phase of the project was to offer for sale any of these materials for teacher or student use in pesticide programs. This was done, and numerous requests for materials have been received by the Vocational Agricultural Service. It is intended by the project directors to expand this project to include information on "Safe Pesticide Usage in Greenhouses and Demonstration Plots."

The project directors stated that the law influenced the setting-up of this project. In 1976 the Environmental Protection Agency held a regional meeting in Chicago which the directors attended. It was stated there that there was an urgent need to increase teachers' knowledge of pesticides and train them in their use. The proposal for the project was written in 1976, but the project was not funded until 1977. As well as providing the initiative for the project, the E.P.A. also provided extensive materials for teachers and students on pesticides.

Evaluation sheets were circulated to all participants in workshops in this project and have been viewed by this investigator. The directors of

the project felt that the key teachers did an excellent job and that the materials were well received and accepted by the teachers. The general consensus of the teachers' comments was that the materials were excellent for use in schools. Teachers felt that the workshops were well organized and that the instruction was good. An important and often repeated comment of teachers was that they would like more courses of a similar nature offered on other agricultural topics. Some teachers felt that more time was needed to teach the pesticide information and this comment seemed to come from those teachers at workshops held only for a half-day.

13. Competency-Based Curriculum for Agricultural Occupations Programs. Phase 1 -- Developing an Occupational Matrix and Completing a Job Title Purposive Study.

This project was funded by the DAVTE and Phase 2 is now in operation. The project directors are Professors Eugene Wood, James Legacy and Thomas Stitt of Southern Illinois University at Carbondale. Dr. James Legacy was the principal investigator on Phase 1 of the project. The objectives of the project (Phase 1) are:

1) A horticulture job title matrix listing in a systematic format the job titles in horticulture.
2) A validated listing of tasks for one job title. A purposive study will be the process to accomplish this activity.
3) A documentation of procedures which are effective in implementing V-TEC's in Illinois vocational programs. (V-TEC is a job list in different job areas.)

As a result of this project, a booklet entitled "Horticulture Education for Illinois" outlines the seven major business groups making up the Illinois horticulture industry. This booklet is based upon the occupational

matrix for horticulture. In Phase 2 similar booklets are to be produced for six other agricultural occupation program areas. This booklet has been or is being distributed to a total of 300 teachers in Illinois with the view that the booklet will be useful for horticulture teachers and guidance counselors in giving advice about careers in horticulture.

Teachers in the schools visited had not heard of the project. However, 12 teachers did have the booklet at their school, vocational center, or college. The comments of teachers about the booklet were generally quite disparaging. These teachers thought the booklet had only scratched the surface. They felt that much more information could be made available about the jobs such as in the Phase 1 report of Elston's project on horticulture (project 14). Better career education material was sorely needed. Five teachers (including the three stated previously) stated that they have used the booklet in class for showing students what jobs were available in horticulture.

The investigators in their proposal stated that this study was unique in the newness of its products to the curriculum development process in Illinois. They stated that a horticulture curriculum matrix did not exist in Illinois and no purposive study had been completed in Illinois. They felt that the results of this project would provide a firm foundation for future curriculum development activities in horticulture and also provide a guide for curriculum development in other vocational disciplines.

The first phase of the project introduced project staff to current task analysis procedures of developing competency-based vocational curriculum. Phase 1 developed a list of job titles for one of the USOE Agricultural Occupation program areas. The area chosen was horticulture. One horticulture job title area was selected to test task analysis validation proce-

dures (purposive study). The purposive study is the curriculum development step which validates a job title list (catalog) of tasks for a specific geographic area. In this case, the Retail Florist job title area was selected. Finally the validated list of tasks contained in the job title catalog was sequenced to form the basis for the development of curriculum which will take place in Phase 2.

Phase 2 will follow the purposive study of the Retail Florist's job title area by developing competency-based instructional materials for that job title area. In addition a job title matrix will be developed for Illinois Agricultural Occupations. Based upon this previous work, a five-year plan for the development of a competency-based curriculum for selected job title areas will be completed.

On interviewing two of the project directors it was stated that Dr. Legacy initiated the study which arose out of discussions at the monthly Joint-Staff meeting. A request for proposals was drawn up by the State Office based upon suggestions from the Joint-Staff meetings.

14. Competency-Based Curriculum Project in Ornamental Horticulture -- Procedures and Curriculum Guide.

This project has been funded by the DAVTE. The project director is Mr. Norman Polaskey, Director of State and Federal Programs, Brennen Community High School District. The principal investigator is Miss erri Elston, Instructor, Tinley Park High School.

The purpose of this project is to produce a detailed Curriculum Guide which will be used as a foundation for competency-based instruction. Phase 1 of the project was the carrying out of a Feasibility Study and a Task Analysis. The feasibility study determined the potential utilization

of this curriculum in Ornamental Horticulture. The task analysis provided evidence for the need for competency-based instruction in Ornamental Horticulture that will provide students with job entry competencies.

A detailed Curriculum Guide was prepared with the development of: Measurable Objectives to state what students are expected to learn as a result of instruction; Evaluative Instruments to determine whether students are learning the objectives; Learner Activity Materials to support the teaching so that measurable objectives are learned by the students; and the Validation of Individual Modules to determine if the instructional materials teach the students for whom they were designed. This guide was prepared for students in grades 10-12 as an introductory one semester course.

Not one of the teachers interviewed had heard of the project, which was understandable because it has not been completed. However all the teachers studied a copy of the final report on Phase 1 of the project which included the guide and found the guide interesting and containing very useful material. At least one-half of the teachers noted Miss Elston's address and intended to try to get a copy of the guide. Several teachers mentioned the trend in their school district towards competency-based education and thought that the guide would be an excellent resource and model in the way that it was planned.

The investigator discussed the project with the principal investigator. The origin of the project was a request for a proposal (RFP). The RFP originated out of the recent trend for increased emphasis on competency-based education and accountability in education. Miss Elston reported that Phase 2 of the project is now in operation with the implementation of the guide followed by revisions and the guide's publication.

## 1.3 Conclusions

In this report 14 projects were discovered through a study of the report by Ramp, personal communications with two University of Illinois professors and information from the State office. As much information as possible was obtained on them from project directors, a state consultant and participating teachers. A sample of 18 schools and a junior college were visited to assess the impact of these projects on the horticulture instructors and on the horticulture programs. Excluding the statewide pesticides workshops, only six of the teachers had attended any form of horticulture workshop in the last ten years. Seven teachers attended the pesticides workshops which included three teachers already mentioned as having attended horticulture workshops. Therefore, from a sample of 22 teachers, only 10, less than one-half of the teachers, had participated in any of the workshops discussed in this report.

The conclusion that could be drawn from this is that many Illinois teachers of horticulture have not benefited from workshop experience or have not been advised or informed of workshops. However, many teachers had obtained the materials produced for the workshops through the Vocational Agriculture Service. It is very significant that teachers, especially those in secondary schools, continually mentioned the value of the Vocational Agricultural Service and the teaching materials, resource materials and the monthly bulletin of information. It has been pointed out that many teachers had materials from projects as a result of the school being on the Vo-Ag Service mailing/subscription list. The effect of this is that despite workshops and courses having relatively small contact with teachers, the materials produced have been circulated quite widely. The impression gained by this investigation is that the impact and value of the

Vocational Agricultural Service appears to be a vital necessity in Vocational horticulture in this state. Almost all teachers used Vo-Ag Service materials in their teaching and constant updating with inservice programs is to be encouraged.

A further conclusion is that regular workshops for improving the practical skills of ornamental horticulture teachers would be both of great value and very welcome. There appears to be a high rate of turnover (10 percent or greater each year) of vocational agriculture/horticulture teachers, and participants of workshops may be lost to the teaching profession a few years later. Their replacements often do not have the knowledge imparted by the workshops, nor do they know of existing curriculum materials available to them or the processes of securing help from their peers or the universities. It is recommended that the DAVTE regularly fund projects concerned with practical skill training topics because of this high rate turnover of teachers.

Teachers were asked whether they would like to suggest courses in horticultural topics for teachers in the future. It was clear from their responses that workshops or courses in practical topics were wanted. The topics suggested were: landscaping, turf management, greenhouse management, plant identification and plant propagation. All these were topics dealt with in projects 2, 8 and 10. It does seem as if there might be regular workshops established on improving skill competencies of horticulture teachers with an emphasis on the practical approach. Teachers also complained that no money was made available by the DAVTE to help schools obtain greenhouses for their ornamental horticulture classes. This should be reconsidered. All of those initially funded in 1967-1969 are operating successful programs. It was evident to the investigator that schools which

had greenhouses were making extensive use of them. DAVTE might well consider funding projects which will help schools obtain greenhouses, and provide courses on greenhouse experience and management.

Vo-Ag Service "AIDS" appears to be a valuable source of information for ornamental horticulture teachers, by supplying details of workshops, courses, available teaching materials and information from other states. Nearly all teachers reported receiving "AIDS" and expressed confidence that it provided them with up-to-date information readily adaptable to school use. "AIDS" is a ready-made organ of communication to virtually all agriculture and horticulture teachers in Illinois schools and colleges. Ample use should be made of this bulletin to increase the impact of horticultural projects through the dissemination of their findings, products, or suggestions.

The monthly Joint-Staff meetings appear to be very important in the determination of what proposals will be submitted and funded. These meetings are attended by staff from the four universities which teach agriculture and horticulture, representatives from the vocational teachers in agriculture and horticulture, and staff consultants from the I.O.E. Because there is close contact between horticulture and agriculture specialists in different spheres of the educational system, the monthly meetings should provide an excellent opportunity for teacher representatives to voice the concerns and needs of teachers in schools. These concerns can be brought to the notice of State representatives and University staffs promptly and appropriate action taken.

In quantitative terms, the greatest documented impact of the State's investment in horticulture has been the increase in the number of programs claiming reimbursements for vocational horticulture -- from just 1

program in 1967 to 133 in 1977! Based on the funding information PROJECT IMPACT was able to obtain for 14 projects, the cost of this increase was less than $200,000. But what impact these programs have had on the knowledge, skills, attitudes or employability of horticulture students remains to be largely an unanswered question.

PROJECTS

| Program Development | Practical | |
|---|---|---|
| Vocational Horticulture Specialty Programs for Secondary Students | | 1969 |
| | Commercial Horticulture Skill-Practices Institute | 1970 |
| 1. Demonstration Package for Illinois High Schools (Rochelle) | Improving Comptencies of Teachers of Ornamental Horticulture | 1971 |
| 2. Horticulture Alternatives Package (Naperville) | | |
| 3. Horticulture Instructional Packages (Chicago) | | |
| 4. Horticulture Instructional Packages (Alton) | | |
| 5. Improving Environmental Quality | | 1972 |
| Program Planning Guide in Ornamental Horticulture | | 1975 |
| | Workshops to Improve Competencies of Teachers of Ornamental Horticulture | 1976 |
| | Ornamental Horticulture Workshop | 1977 |
| 1. Pesticide Workshops | | 1978 |
| 2. Competency-Based Curriculum for Agricultural Occupations Programs | | |
| 3. Competency-Based Curriculum Project in Ornamental Horticulture for Secondary Schools | | |

## 2. Critical Decisions of the Horticulture Projects

1. The funding of the vocational horticulture specialty programs appears to have been an important step in the establishment of ornamental horticulture programs in schools in Illinois. The influence of this project and the related projects following was felt increasingly over the years, especially in the Greater Chicago region.

2. The provision of workshops to provide skill training for teachers in ornamental horticulture was an admission by the state of the lack of teachers trained in practical skills.

3. The project which involved the establishment of a core of "master" teachers to go out to their FFA regions and teach their fellow teachers was a key step in attempting to reach out to all vocational agriculture teachers in the state (1971, 1978).

4. The funding of projects over a two-year period (e.g., 1971, 1978) illustrated an awareness by the DAVTE of the need for intensive research and curriculum planning.

5. The funding of the projects on competency-based horticulture education (1978) represented an important step in establishing "accountability" in ornamental horticulture education. With the emphasis on specific competencies, teachers may be better able to convey their skills and knowledge to their students.

## 3. Major Events of the Horticulture Projects

1967 Funding of specialty programs for ornamental horticulture in two Illinois secondary schools.

1970 Employment of private industry resources to increase teachers' skills in ornamental horticulture.

1971 Funding of school greenhouses at Rochelle, Alton and DeKalb.

1975 Program planning guide in horticulture, which supported the concept of teaching specific competencies to students.

1977 Funding of a project over a two-year period at least, thereby creating continuity and enabling longer-range planning.

1978 Establishment of competency-based curriculum project which could be implemented widely over the whole state.

4. Publications of the Horticulture Projects

1. Project: Improving Environmental Quality Through Applied Biological and Agricultural Occupations Programs in Illinois Schools.

   i) Environmental Slide Series, #1-5, Cooperative Extension Service, University of Illinois, 1972.

2. Project: Development of Teachers' Guide and Students' Instructional Materials for Seven Selected Applied Biological and Agricultural Occupation Related Areas.

   i) Program Planning Guide in Ornamental Horticulture, Southern Illinois University, June 1975.

3. Project: Workshops to Improve Competencies of Teachers of Vocational Ornamental Horticulture Programs.

   i) Workshop series for teachers or prospective teachers of ornamental horticulture programs, University of Illinois, 1975.

   ii) Horticulture: references, programs, slides. Cooperative Extension Service, University of Illinois, 1975.

4. Project: Pesticides Workshops and Teaching Materials for Secondary and Community College Teachers of Agriculture.

   i) Identifying Common Insect Pests - Courson.

   ii) Diseases of the Vegetable Garden - Smith, Jacobsen and Courson.

iii) Problems for Pesticide Calibration - Teacher's Manual - Coil and Courson.

iv) Problems for Pesticide Calibration - Student Manual - Coil and Courson.

v) Teaching High School Students and Adults to Select, Handle and Use Pesticides Effectively and Safely - Hemp.

5. Project: Competency-Based Curriculum for Agricultural Occupations Programs - Phase 1.

i) Horticulture Education for Illinois - Legacy, Stitt and Wood.